

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
18 March 2004 (18.03.2004)

PCT

(10) International Publication Number
WO 2004/023003 A1

(51) International Patent Classification⁷: **F16H 61/02, B60K 41/06**

(74) Agent: **FRÖHLING, Werner**; Volvo Technology Corporation, Corporate Patens, 06820, M1.7, S-405 08 Göteborg (SE).

(21) International Application Number:
PCT/SE2003/001389

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(22) International Filing Date:
5 September 2003 (05.09.2003)

(25) Filing Language: Swedish

(26) Publication Language: English

(30) Priority Data:
0202704-3 9 September 2002 (09.09.2002) SE

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(71) Applicant (*for all designated States except US*): **VOLVO LASTVAGNAR AB** [SE/SE]; S-405 08 Göteborg (SE).

(72) Inventors; and

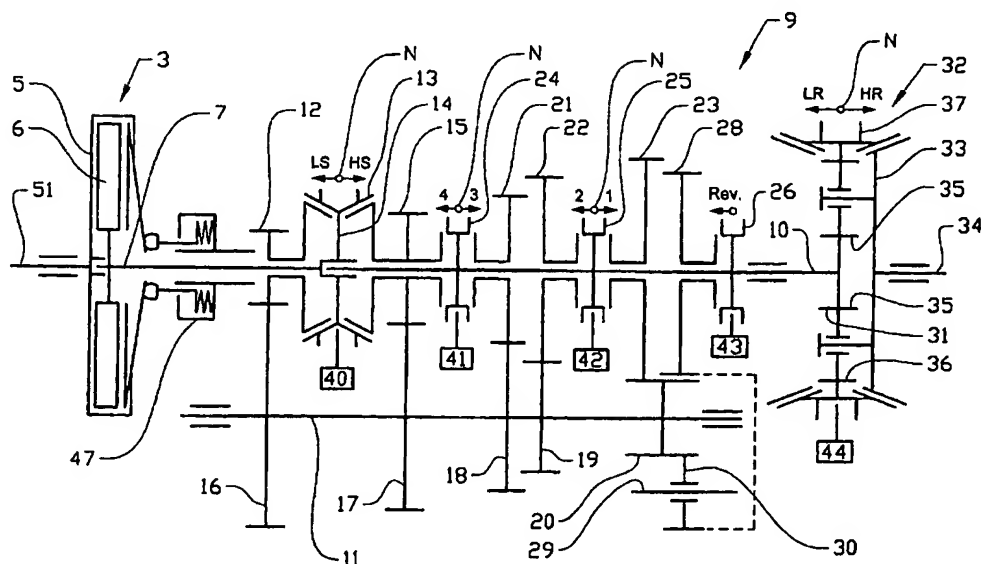
(75) Inventors/Applicants (*for US only*): **STEEN, Marcus** [SE/SE]; Fotbollsvägen 31, S-424 33 Angered (SE). **KARLSSON, Lars** [SE/SE]; Björcksgatan 64D, S-416 51 Göteborg (SE).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: **STAGE-GEARED GEARBOX FOR MOTOR VEHICLES**



(57) Abstract: Stage-gearbox (9) for motor vehicles, comprising an unsynchronized basic gearbox (15, 17, 21, 18, 22, 19, 23, 20, 28, 30), at least one synchronized auxiliary gear (12, 13, 15, 16, 17) and at least one control unit (45) for controlling engagement and disengagement of the gears of the gearbox (9) and also neutral position. The gearbox is characterized in that the control unit (45) is arranged so as, when input signals indicating that neutral position is selected are received, to put the synchronized auxiliary gear (12, 13, 15, 16, 17) in neutral position.